Measurements and repeat of website info on using RSS made sails for boats other than the intended

Weight and type of boat.

These sails are the correct weight cloth for trailer boats held up by the weight of their crew.

They are not suitable for keelboats and water ballasted boats, unless they are small and light - smaller than 14ft and not too heavy. The SCAMP comes to mind as being OK.

Also use on heavy trailerboats (say hullweights over 300lbs) or multihulls constitute a larger risk. The 4.1 oz cloth will be overloaded outside that envelope because of excessive hull stablity.

If in doubt, check with the designer of your boat.

Experienced hands who know a lot about balance and weather and lee helm can skip the next bit and go straight to the "Special note about leeboards and helm balance"

Helm Balance

Balance is about the relationship of the centre of the sail with the centre of lateral resistance (CLR) of the hull. Usually CLR is centred on a keel, leeboard or centreboard, though it can get cloudy with long keels or where the boat is fitted with a rudder skeg or deadwood.

Note that a centreboard and leeboard (or bilgeboard or offcentreboard) are in relationship to where the board is laterally in the boat. Many consider that a centreboard is a swinging board. This is not quite logical. For the mechanism or the way the board works there is a swinging board or a dagger board. So thus there is a swinging centreboard, a dagger centreboard, a swinging leeboard or a dagger leeboard. One term is the mechanism, the other is the location Centre=Center :)

I'm niggling on this because some will be confused if I don't spell out what I mean in a precise way.

If the relative positions of the CLR and the Centre of the Sail is too wrong the boat will be a cow to handle.

It is easy to see if this is wrong as the tiller will have to be pulled or pushed dramatically away from the standard centreline position.

<u>Sail Centre too far back relative to CLR - Weather helm</u>

If the Sail Centre is too far back the boat will want to point up towards the wind in gusts and the tiller will have to be pulled hard to windward, particularly in gusts. This is called weather helm.

A small amount of weather helm is OK or even good.

For light boats with pointed bows and transom sterns which depend on the weight of the crew to hold them upright, weather helm can also be caused by heeling too much. So if you have weather helm problems a combination of leaning out harder, sailing closer to the wind so the sails partially luff and easing the mainsail can help sail the boat level. Some always say that they are not heavy enough to hold the boat upright, but such people are often passed by lightweight crews that keep their boat level through practiced handling.

In strong winds weather helm can be reduced in a daggerboard boat by pulling 6 or 8 inches of centreboard up

when going to windward.

With a swinging board you can swing the board a little further back or ease the mainsail to get the correct balance.

Apart from stretching your arm if the centre of the sail is too far back the boat will not like to tack easily and sometimes get stuck halfway through head to wind.

Sail Area too far forward relative to CLR

This is generally quite bad for sailing performance. It feels like you have to push the tiller away continually to keep the boat going to windward. It will often stall when tacking, not quite getting head to wind before it stops and then fall back quickly onto the original tack when you try.

If the boat has a swinging leeboard or centreboard you can swing the board more forward to help balance the sail.

In most other cases you have to bring the mast further back or move the centreboard or leeboard further forward.

Special note about leeboards and helm balance

A single Leeboard boat is an interesting exception to the normal way we calculate the relationship of the CLR and Sail Centre.

The drafting or calculation method is a pure 2D method, which is why it always has a fudge factor that is a bit different for every designer. It is an OK method when boats are symmetrical. But when a boat has a single leeboard the 3D situation needs to be addressed.

The 2D method assumes that the force from the sail when the boat is going upwind is purely lateral. But in reality it is lateral but also somewhat forward.

Think of the case where we position a leeboard on the leeward side of the boat using the 2d method. Because the sail is directing power forward as well as sideways the power arrow would go in front of the leeboard. Lee helm!

Now put the single leeboard on the windward side. The same arrow has its nose pointing forward slightly, so its tail end would be already pointing behind the leeboard. Weather helm.

So a boat with a single leeboard will change from having weather helm on one tack to lee helm on the other.

We know in general that lee helm where the sail is too far forward is bad for performance and some weather helm is OK. So I work out the relatioship of the sail centre and CLR as per normal but then either move the sail back slightly or the leeboard forward to compensate. With a swining leeboard you can often compensate for both with different angles of the board.

The wider the leeboard is set from the centreline, the more this adjustment will have to be.

Boat Setup - rope types, tensions, how to rig.

Even with boats following my plans carefully there are sometimes problems in the way the boat handles. In every case this has been solved with a bit of tuning up.

First the sail must look in about the same position relative to the mast and for the angle of the sail's front edge

with the mast should match that of the drawings below. You can move the sails a little forward and back to get better balance, but it is no more than a couple of inches (50mm) either way before you start having problems.

Also recommend following the general lug rig rigging guide here - bookmark it as you WILL need it later. The only area that might not be relevant on those pages is the mainsheet which should follow what your designer recommends, but with a sliding traveller as in the link.

It is worth mentioning and repeating the importance of setting up the downhaul with light tension when the boat can barely move. A lot of tension once the boat had reliable speed and enormous/bizarrely high tension when the wind is strong.

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Adequate Centreboard or leeboard area

Several people have asked if a sail from ReallySimpleSails will make their boat go better. But it won't work if other things are wrong.

You can use the information in the Boat setup to improve your current sail setup. If you need a bigger sail or your existing sail just looks bad even following our setup instructions, then an RSS made sail might well help.

However, one area where a little bit of work makes a huge difference. For boats that suit these sails, I would consider any of them to have inadequate centreboard or leeboard area if its dimensions below the bottom of the boat were much less than 2.5 ft deep (750mm) and having less width than 10 inches (250mm). In that case a bit extra on the bottom of the leeboard or centreboard might make a lot of difference too.

Hull Shape Considerations

I have two drawings below, one for each sail. If your boat is shallow bodied with the transom and the bow not deeply immersed with only a centreboard or a narrow fin keel and rudder (no skegs, keelsons thenyou can use these directly. I have marked a probable range which is likely to be OK for this scenario.

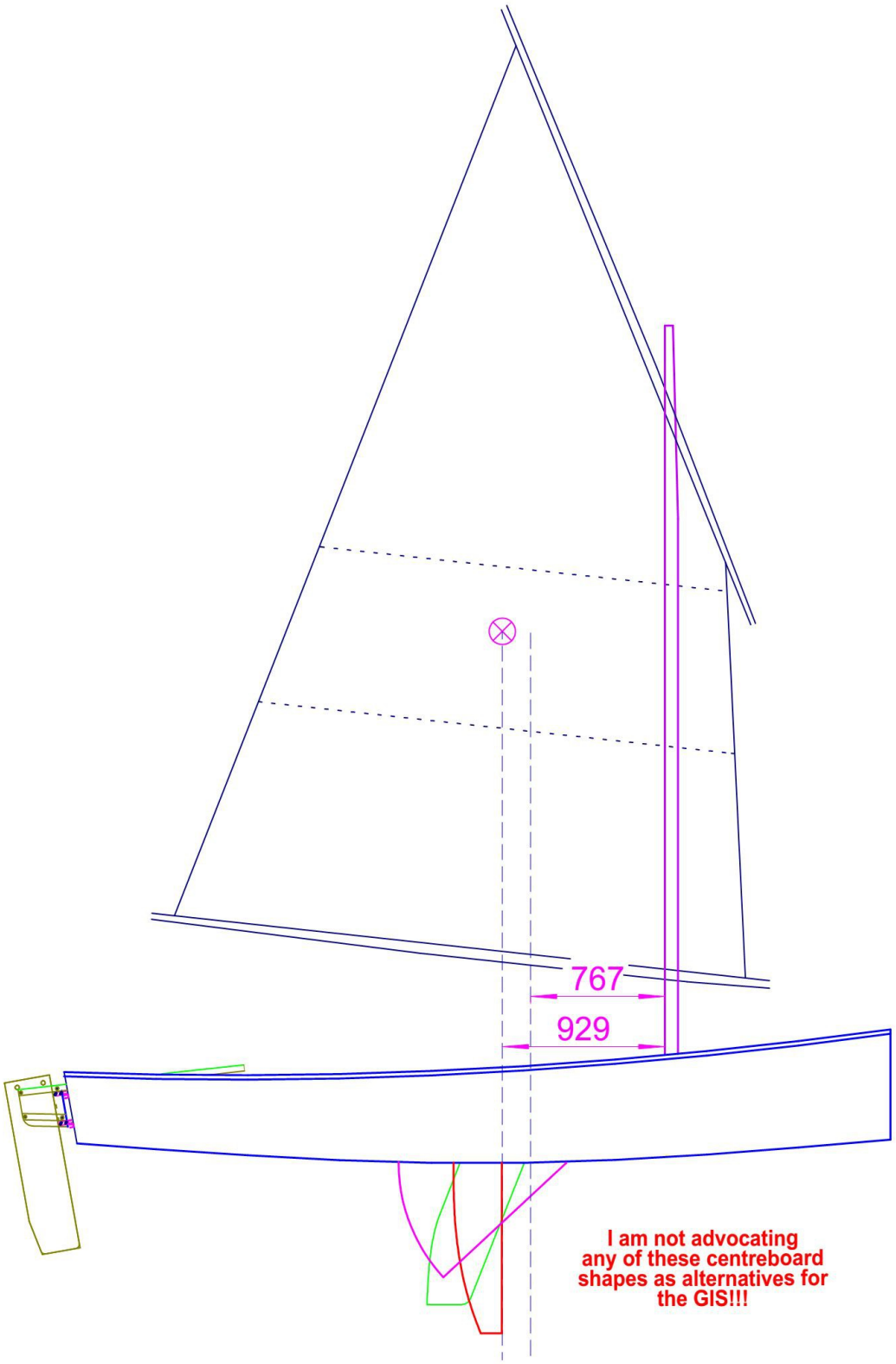
It is based on the assumption that the hull will end up being close to symmetrical in profile

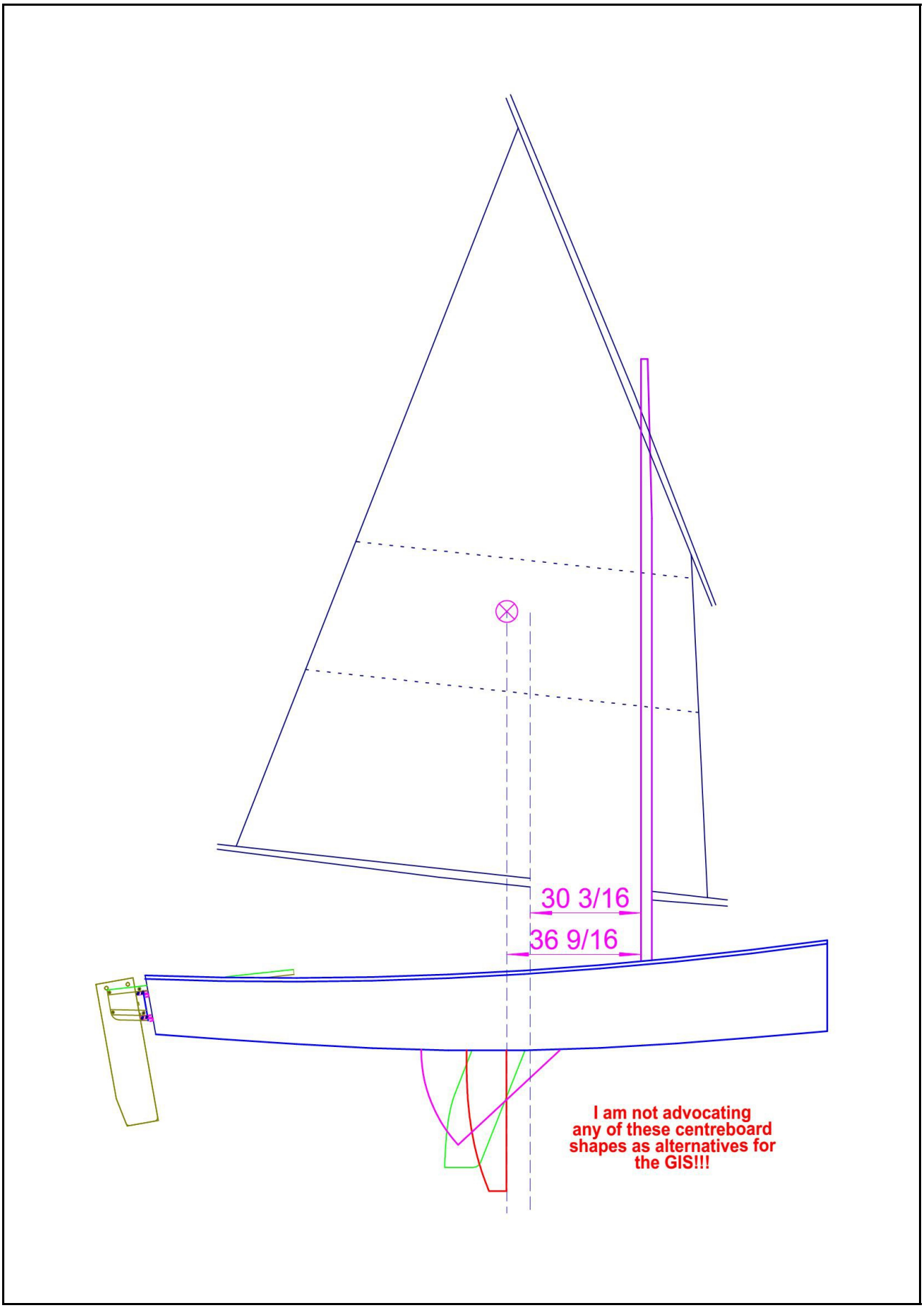
So if your boat fits the type of boat criteria and the hull shape considerations then these drawings provide a ready reckoning possible.

At your own risk of course.

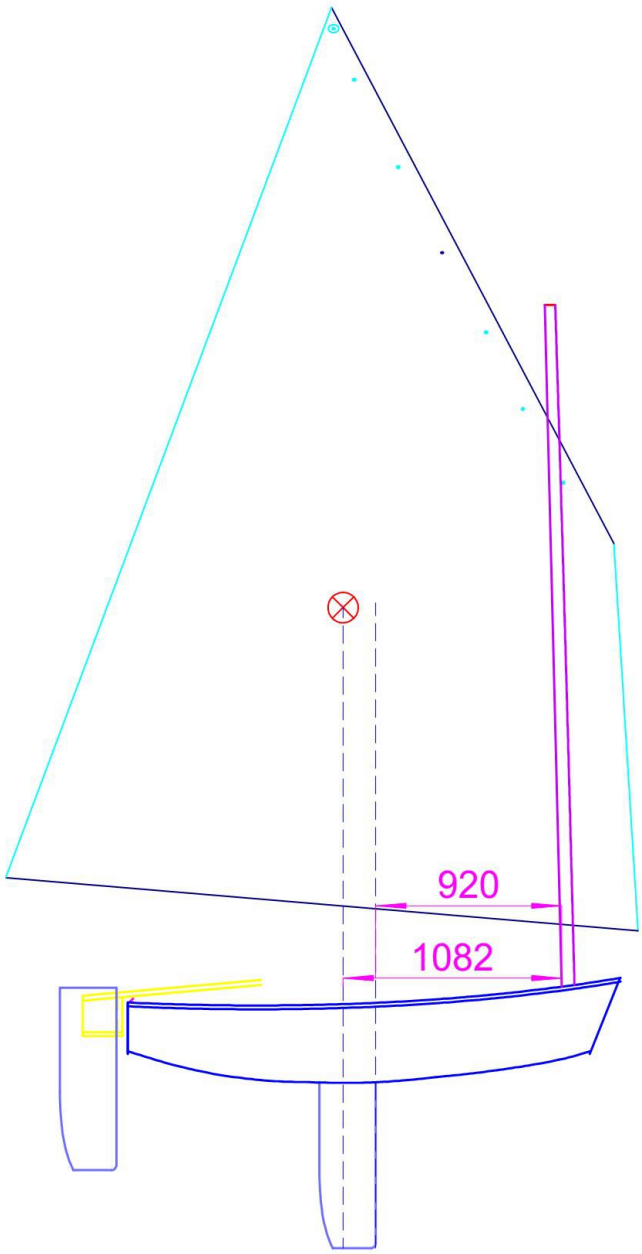
GIS Sail, Goat Island Skiff. (This drawing and a version in inches are in the PDF file at the end of this article)

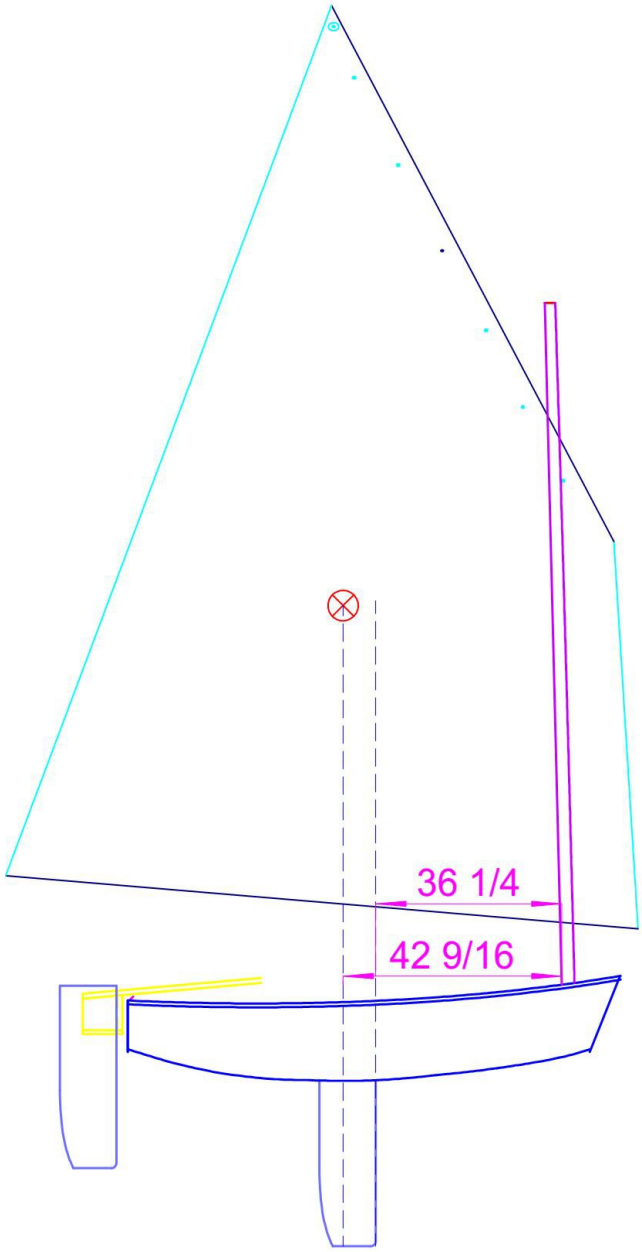
Note how the three versions of the centreboard all have the centre of the underwater part of the leading edge through the same point. They all have the same effective CLR.





OZ Sail - OzRacer Mk2, OzRacer RV, Some PDRacers, OzGoose, Perttu Korhonen's Ocean Explorer. (This drawing and a version in inches are in the PDF file at the end of this article)





If in doubt the centreboard or leeboard being a little bit further forward is the best choice.

You can see how the Goat Island Skiff is set up with the centreboard at the back of the range, while the OzRacer Mk2 has the centreboard at the forward end of the range.

The reason for this is that the Goat is easily driven and will travel fast, responding well to the helm. It is also a shape that will develop a little weather helm when heeled (pointy bow and transom stern).

The OzRacer is a slower boat which will be knocked around more by waves so needs a bit of extra weather helm to stop the nose from being knocked away from the wind. It is also a trainer style boat so a bit more weather helm makes it more forgiving than the more agile Goat. The boxy OzRacer shape also means the boat doesn't generate much weather helm when it heels (not a pointed bow, transom sterned boat) so some extra needs to be dialled in from the start.

Here are the sail dimensions and centres. Actual area GIS is 105 sq ft. Actual area Oz is 89sq ft. Includes round and allowances.